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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

CHUNG, JI YONG DAVID

ART UNIT	PAPER NUMBER
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2143

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application N .</b>	<b>Applicant(s)</b>	
	09/991,323	RICHARD, BRUNO	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ji-Yong D. Chung	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 1-11, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/13/2001</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

1. **Claims 1-11, 15 and 16** are objected to because of the following informalities: claims 1 and 9 refer to drawing labels. Claims 2-8, 10, 11, 15 and 16 are dependent claims and they are objected to for the same reason.

2. **Claim 10** is objected to because of the following informalities: Claim 10 recites the limitation "said first and second broadcast addresses" in claim 1. Taken literally, there is insufficient antecedent basis for this limitation in the claim.

Claim 10 immediately follows independent claim 9, which does cite the referenced limitations. For the purpose of further examination on merits, it is assumed that claim 10 contains a typographical error and that the base claim from which it depends is claim 9.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 3, 15/3, and 16/3** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 cites "2<sup>n</sup>". Note that for the subnet detection scheme, the second subnet for whose IP address range goes up in powers of two of "n", whatever that maybe, must contain the first subnet. It cannot be contiguous with it, as claim 3's limitation requires.

Art Unit: 2143

Claim 3 will not be considered further on merits.

**Claims 15/3 and 16/3** incorporate all the corresponding limitations of claim 3, but in apparatus or in product form rather than in method form. The reasons for the rejections of claim 3 apply to claims 15/3 and 16/3. Therefore, claims 15/3 and 16/3 are rejected for the same reasons.

Claims 15/3 and 16/3 will not be considered further on merits.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 1, 2, 4, 5, 8, 12, 15/1, 15/2, 15/4, 15/5, 15/8, 16/1, 16/2, 16/4, 16/5, and 16/8** are rejected under 35 U.S.C. 102(e)(2) as being anticipated by Bonn.

With regard to **claim 1**, Bonn discloses *process for automatically discovering the topology and components of an Intranet network* [See Fig. 3, “Identify Subnet” figure, which indicates *discovering the topology and components.*] *comprising at least one sub network, to which are attached devices complying with TCP/IP protocol* [See Fig. 4

Art Unit: 2143

network, to which are attached devices using IP addresses, thus indicating its compliance with TCP/IP protocol] *said process running into one particular device being assigned an IP address*, [See “current node” in Fig. 3, for one device which has an IP address] *and comprising the steps of:*

*computing a set of sub network configurations to which the IP address of the device could belong* [lines 11-19, column 2];

*using the ICMP layer of said TCP/IP protocol for successively testing and validating said configurations for the purpose of elaborating an extensive description of the network architecture* [See step 306, Fig. 3. Note that ICMP request is equivalent to “ping” or sending a test packet].

With regard to **claim 2**, Bonn discloses:

*discovering a first sub network having a determined range* [See Fig 3, for the first subnet. Note that any subnet has a determined range].

*computing a sequence of potential candidate sub networks of the same size as that said first sub network and being contiguous with said first sub network* [in CIDR networks, the subnets must be contiguous. Unless one is to perform super-netting, which implies the second subnet must include the first subnet, each of the additional subnets (after the first one) spans the same number of addresses];

*successively testing and validating by means of the ICMP layer of the TCP/IP protocol each of said potential candidate sub networks* [See step 306, Fig. 3].

Art Unit: 2143

With regard to **claim 4**, Bonn discloses *said testing and validation are based on the computation, for each of said configurations, of a first broadcast address (BC1) and a second broadcast address (BC2), which are used for transmitting a ICMP Echo Request.*

[See lines 17-21, column 4. The later validations are based on the initial broadcast, which is used for the host identification]

With regard to **claim 5**, Bonn discloses *said first and second broadcast addresses (BC1, BC2) are computed in accordance with the following formula:*

$$BC1 = IP \text{ AND } SubnetMask$$

$$BC2 = (IP \text{ AND } SubnetMask) \text{ OR } (NOT \text{ SubnetMask})$$

*where IP represents the Internet Protocol address assigned to said particular device where said process is being run, and the SubnetMask is the value of the mask corresponding to the sub network configuration which is to be tested and validated.* The two broadcast addresses, BC1 and BC2, even though expressed in formulas, are nothing more than **the** broadcast addresses for a subnet, and thus inherent in subnet broadcasting. Subnet broadcasting has been mentioned in reference to discussion of claim 1. Note that BC1, as defined in the claim, is an expression for the broadcast addresses in the old network systems (that is, broadcast address used for backward compatibility).

With regard to **claim 8**, Bonn discloses *receiving an IP address by means of a self IP configuration via where the particular device is assigned an IP address and, possibly, the subnet range of the sub network to which it has been attached.* See line 21, column 4,

Art Unit: 2143

where Dynamic Host Configuration Protocol (DHCP) request is mentioned. In DHCP environment, host machines receive IP address by means of "self IP configuration."

**Claim 12** lists all the corresponding limitations of claim 8, but in apparatus form rather than in method form. The reasons for the rejections of claim 8 apply to claim 12, and therefore, claim 12 is rejected for the same reasons.

**Claims 15/1, 15/2, 15/4, 15/5, 15/8, 16/1, 16/2, 16/4, 16/5, and 16/8** incorporate all the corresponding limitations of claims 1, 2, 4, 5, and 8, but in apparatus or in product form rather than in method form. The reasons for the rejections of claims 1, 2, 4, 5, and 8 apply to claims 15/1, 15/2, 15/4, 15/5, 15/8, 16/1, 16/2, 16/4, 16/5, and 16/8. Therefore, claims 15/1, 15/2, 15/4, 15/5, 15/8, 16/1, 16/2, 16/4, 16/5, and 16/8 are rejected for the same reasons.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 6, 7, 9, 10, 13, 14, 15/6, 15/7, 15/9, 15/10, 16/6, 16/7, 16/9, and 16/10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonn, in view of Lin et al., cited in Information Disclosure Statement, provided by the Applicant. It would have

Art Unit: 2143

been obvious to one skilled in the art at the time of the invention to modify steps disclosed in Bonn with features shown in Lin et al., for the reasons that are explained below.

With reference to **claim 6**, Bonn does not disclose the claim 6's limitation, *the use of Simple Network Management Protocol (SNMP) requests to the different addresses within the address range of said validated sub network, for the purpose of extracting and gathering information from the devices attached to said validated sub network*. Lin et al. shows using SNMP, for the purpose of extracting and gathering information. See page 1192, column 2, "II. Topology Configuration Information." Lin et al. also discloses the motivation for combining the subnet discovery steps with SNMP: Lin et al. suggests the combination of SNMP, MIB and, ICMP together for extracting and gathering topology information. See page 1192, column 2, "II. Topology Configuration Information."

With reference to **claim 7**, Bonn does not show the use of *the Management Information Base (MIB), and particularly node 1.3.6.1.2 for the purpose of gathering information relevant to the routers attached to the discovered sub networks*. Lin et al. shows using MIB with SNMP, for the purpose of extracting and gathering information. See page 1192, column 2, "II. Topology Configuration Information." Lin et al. also discloses the motivation for combining the subnet discovery steps with MIB: Lin et al. suggests the combination of SNMP, MIB and, ICMP together for extracting and gathering topology information. Note that 1.3.6.1.2 is merely OID of management



Art Unit: 2143

groups in MIB, and inherent in MIB. See page 1192, column 2, "II. Topology Configuration Information."

With reference to **claim 9**, all of its limitations, except limitations b) and f), have been discussed as being disclosed by Bonn, in discussion of the rejection of claims 1, 4, 5, and 8.

Bonn discloses *b) computing a first value representative of a first subnet mask comprising a prefix with n logical 1, said first subnet mask corresponding to a first sub network to which is likely to belong said IP address* [The subnet mask comprising prefix with n logical 1 is inherent].

Bonn does not disclose *f) decrementing n by 1 and repeating steps b)-e) for the purpose of testing new values of possible subnet masks*. Bonn does not show the limitation. Bonn's subnet discovery algorithm begins with a root of a network and descends to its leaves; this amounts to incrementing n by 1 as the algorithm moves toward the leaf. Lin et al. discloses a searching algorithm that begins with the lower branches and progresses toward the root. In such algorithm, logical one's in the subnet masks must be decremented. See page 1193, III. TOPOLOGY DISCOVERY ALGORITHM. The motivation for using alternative tree **traversal** algorithm is suggested by Bonn's disclosure, which states "the facility could be adapted for different types of subnet trees, different **traversal** orders ..." [lines 11-13, column 7, Bonn].

**Claim 10's** limitations have been discussed with respect to claim 5, as being disclosed by Bonn.

Art Unit: 2143

With regard to claims **13 and 14**, they list all the corresponding limitations of claims 9 and 10, but in apparatus form rather than in method form. The reasons for the rejections of claims 9 and 10 apply to claims 13 and 14, and therefore, claims 13 and 14 are rejected for the same reasons.

Note that claim 13 mentions *testing another value representative of a second subnet mask if said ICMP Echo Requests do not provide any answer*. The limitation is met by Lin et al.'s disclosure, because multiple subnet masks are involved in Lin's method. It is inherent in Lin's method that the second broadcast address is tested when there is no reply to first broadcast address.

**Claims 15/6, 15/7, 15/9, 15/10, 16/6, 16/7, 16/9, and 16/10** incorporate all the corresponding limitations of claims 6, 7, 9, and 10 but in apparatus or in product form rather than in method form. The reasons for the rejections of claims 6, 7, 9, and 10 apply to claims 15/6, 15/7, 15/9, 15/10, 16/6, 16/7, 16/9, and 16/10. Therefore, claims 15/6, 15/7, 15/9, 15/10, 16/6, 16/7, 16/9, and 16/10 are rejected for the same reasons.

9. **Claims 11, 15/11, and 16/11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonn.

With regard to **claim 11**, Bonn does not disclose that the *discovered topology is transmitted to an external server by means of a HTTP or HTTPS request for the purpose of updating an external database*. However, the method of information transfer to and from server and client is matter of design choice. One can select from a number of transfer protocols, including ftp, sftp, SMTP, HTTPS, and HTTP.

Art Unit: 2143

**Claims 15/11 and 16/11** incorporate all the corresponding limitations of claim 11, but in apparatus or in product form rather than in method form. The reasons for the rejections of claim 11 apply to claims 15/11 and 16/11. Therefore, claims 15/11 and 16/11 are rejected for the same reasons.


***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ji-Yong D. Chung whose telephone number is (571) 272-7988. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ji-Yong D. Chung  
Patent Examiner  
Art Unit: 2143

  
DAVID WILEY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100